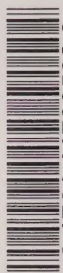


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Field Crop Statistics: Data Sources and Estimating Procedures

Methodology Paper No. 5

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Field Crop Statistics: Data Sources and Estimating Procedures
Methodology Paper No. 5

Les Macartney

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Preface

This publication is one of a number of methodology papers prepared in the Agriculture Statistics Division of Statistics Canada. These methodology papers provide information that enables the user to better understand the procedures employed by statisticians in the Division. Other publications have focused on horticultural, animal products, livestock and farm expense statistics. A paper on grain marketing statistics will be available in the near future.

The author expresses appreciation to Oliver Code and Barry Proud for their helpful suggestions; to Gene Perry of the Canadian Wheat Board for reviewing this paper; and to Pierrette Malette, Denise Delaney and John Humphrey for proofreading and general assistance.

Table of Contents

	page
Introduction	1
Data Sources	3
Mail Survey of Producers	
Census of Agriculture	
Annual Enumerative Surveys	
Other Sources	
Estimating Procedures	6
Area	
Stocks	
Yields and Production	
Provincial Contribution	
Revisions	
Accuracy of Forecasts	15
Data Dissemination	17
CANSIM	
New Developments	20
References	22
Appendix A. Crop Reports	24
Appendix B. Cultivated Area by Crop District	26
Appendix C. Metric Conversion Factors	28
Appendix D. Data on CANSIM	29
Appendix E. Examples of Questionnaires	33



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Introduction

Field crop production is essential to Canadian agriculture [1] and makes a significant contribution to the national economy. Field crops, defined to include grains, forages, oilseeds, pulses and sugar beets, are basic input to the domestic livestock and food processing industries. In 1980, the livestock sector consumed more than sixteen million metric tonnes of cereal grains and oilseeds while the food and beverage manufacturing industries processed roughly another five million tonnes. In addition, field crops and their products usually account for at least four-fifths of total agricultural exports [6]. Most major grains and oilseeds have a clear comparative advantage in international trade [5] and are an important source of foreign exchange.

The figures presented in Table 1, on the following page, indicate how production of the main field crops is distributed among regions. It is evident from this table that cereal grain production is concentrated on the Prairies and that Ontario grows about eighty-five per cent of total grain corn. Considerable quantities of fodder corn and tame hay are produced in most regions; however, output of these crops is sufficient to meet local livestock feed requirements. In contrast, production of Prairie grain, Ontario grain corn and winter wheat is of significance because these crops are grown surplus to regional needs and enter interprovincial and international trade.

The purpose of this paper is to briefly describe the procedures used in preparing Statistics Canada's official crop estimates and to present background material that will assist users. The various topics covered include: data collection, estimation and revision, evaluation of forecasting accuracy, data dissemination and new developments. Discussion of these topics seeks to enhance overall understanding. Non-technical terminology is employed whenever possible and emphasis is placed on fundamental aspects.

The Field Crop Reporting Series, published by Statistics Canada (STC), provides current information on farm production for the principal field crops grown in Canada. The Series is composed of eight reports that are released at pre-scheduled dates in the year. Each of the reports contains up-to-date

Table 1. Production of Selected Field Crops, by Region, 1977-81 Average

	British					
Crop	Maritimes	Quebec	Ontario	Prairies	Columbia	Total
thousand metric tonnes						
All Wheat	28	120	686	19,437	98	20,369
Oats	86	372	339	2,649	53	3,499
Barley	64	98	460	10,268	168	11,058
Rye	--	7	51	525	7	590
Flaxseed	--	--	--	596	--	596
Rapeseed/Canola	--	--	--	2,571	39	2,610
Soybeans	--	--	622	--	--	622
Grain Corn	--	460	4,289	223	--	4,972
Fodder Corn	316	3,569	9,279	681	461	14,306
Tame Hay	945	5,069	6,978	10,923	1,765	25,680

forecasts or estimates at the provincial level for one of the following three variables: stocks, area and production. Two stock reports set forth quantities of the six major western grains¹ held in commercial positions and in farm storage at March 31st and July 31st. Two other reports refer to seeded area: the first indicates crop area that farmers, as of March 15th, intend to seed in the coming season, and the second contains June estimates of area actually sown. The four remaining reports concern yields and production levels. The first two forecast average yields and production based on conditions as of August 15th and September 15th. The next report furnishes end-of-season estimates of area, average yield and production. The final report breaks down the previous season's area, yield and production of crops seeded on summerfallow and on stubble land in the Prairie Provinces.²

Statistics in the reports are up-to-date and generally considered to be the most accurate available. As a result, the Series is widely subscribed to

¹ Wheat, oats, barley, rye, flaxseed and rapeseed.

² Titles, release dates and crop coverages of the report are shown in Appendix A.

across Canada and internationally. Subscribers include a broad array of individuals and organisations such as: farmers, co-operatives, private firms, government agencies and foreign embassies. The private organisations on the mailing list are usually engaged in the grain trade, food processing and farm input industries. Educational institutions, the Canadian Grain Commission, the Canadian Wheat Board, and provincial and federal departments of agriculture are the primary subscribers in the public sector. While farmers are well represented on the mailing list, most obtain this information via the business and farm news media.

Substantial benefit is derived from crop statistics. They contribute to informed decision-making at different levels of the production-marketing system. For example, farmers use results of the intentions survey in finalizing seeding plans, commodity traders constantly react to the latest crop information, and food manufacturers base commodity procurement strategies on production forecasts. It is difficult, however, to isolate and measure the full economic benefit of these statistics. This is because analysts assess the data in relation to a number of supply and demand factors such as production in other major producing countries, and foreign/domestic consumption patterns. Nonetheless, considering the wide number of users and the volume of trade in the relevant commodity markets, STC field crop production statistics influence decisions involving hundreds of millions of dollars annually.

Data Sources

Although the Crop Reporting Program is characterized by a relatively high degree of consultation and co-operation with statisticians in provincial agriculture departments and in the Canadian Grain Commission, the bulk of data used in the Series is generated by three different types of survey conducted by the Agriculture Statistics Division.

Mail Survey of Producers: The primary source of data used in making crop estimates is a panel of more than 20,000 Canadian growers who complete mail survey questionnaires. Panel members, called correspondents, voluntarily participate in completing questionnaires sent out at specific dates during the year. The topic of each questionnaire matches the subject of each report

(planting intentions, areas seeded, stocks of grain, anticipated yield, etc.).

The key advantage of the panel is that it is a ready source of current data. It is economical to operate and places minimal response burden on the correspondent. Questionnaires are only a page in length and there is a relatively short turnaround time between mailing out the questionnaires and processing the returned data. Normally, less than three weeks elapse between questionnaire completion, data tabulation, analysis and publication.

A limitation associated with this approach to collecting data is that panel membership is voluntary. Although practically all farmers are quite willing to respond to occasional surveys, fewer agree to complete a cycle of questionnaires throughout the year. As a result, there arises the possibility that figures obtained from correspondents may not be representative of the whole population of farmers. Managers of the panel are aware of this source of potential error and select correspondents that are representative with respect to age, size and type of operation and geographic location. As well, tests are regularly carried out to ensure that the make-up of the panel conforms with the population of crop farmers.

Management of the panel requires sensitivity to the issues of concern to correspondents. For instance, opposition to the metric concept has been encountered. Questionnaires permit the correspondent to report figures in either metric or imperial units. A large proportion of the questionnaires are completed in bushels and acres rather than in kilograms and hectares and some correspondents have noted that supplying metric quantities would constitute a significant response burden. Consequently, until correspondents are willing and able to accurately reply in metric, crop questionnaires will continue to provide the option of responding in either unit of measurement.¹

¹ Metric conversion tables are sent to all correspondents, thereby facilitating the transition to metric. Conversion factors are shown in Appendix C.

Panel members are also concerned that confidentiality be maintained. Consistent with this agency's established policy, all persons who edit questionnaires or have access to the data from them, are bound under the Statistics Act not to disclose figures from returned questionnaires. In addition, no individual's figures can be shared with another person, business or government department. The data placed on questionnaires are aggregated and used for statistical purposes only.

Census of Agriculture: The Census, carried out every five years, is an enumerative survey of all farms in Canada. Census questions concern farmland use, area of crop, inventories of each type of livestock as well as expenditures on important agricultural inputs.

From the standpoint of the Field Crop Reporting Program, the Census serves two basic purposes. First, the Census acquires data from all farms and provides a complete list of farms growing relevant crops. This list is used in selecting members of the producer panel. Second, census statistics, called benchmark statistics, provide a reference point which is linked to the results of the mail survey of producers. The principal drawback of the Census is that, being a general survey of over 318,000 farms in Canada, it is much more costly to administer than a sample survey and statistics are not available for approximately ten or eleven months after the Census is taken.

Annual Enumerative Surveys: The Farm Enumerative Survey (F.E.S.) and the Agricultural Enumerative Survey (A.E.S.) are conducted in early June. These probability surveys gather figures on crop area, numbers of livestock and farm operating expenses from more than 18,000 farm operators across Canada. The F.E.S. covers the Prairie Provinces and the Peace River District of British Columbia, while the A.E.S. is carried out in all other agricultural regions of the country. For both surveys, land segments of one to three square miles in area are chosen randomly.

Every farm with land in a segment and having revenue from agricultural products of \$250 or more in the previous year is enumerated by personal interview. Data are also collected from all of the very large farms in each province. Questionnaires are roughly twenty pages long and take about an

hour to complete. The object of these surveys is to furnish accurate estimates at the provincial level within two months of enumeration.

Other Sources: Both the March 31st and the July 31st reports contain statistics on inventories of the six major grains held in farm and off-farm (commercial) storage. Commercial stocks include those held in primary, terminal, process and transfer elevators¹ plus transport vehicles but exclude stocks in feed mills, distilleries and seed cleaning plants. All organisations operating licensed elevators are required under the Canada Grain Act to regularly submit stock and flow data to the Canadian Grain Commission [2]. Estimates in the reports pertaining to licensed elevator and in transit stocks are furnished by the Commission's Economics and Statistics Division. Estimates of eastern and western milling stocks of wheat, on the other hand, are based on data generated in a separate STC survey of flour mills' inventories in unlicensed positions.

Estimating Procedures

The purpose of this section is to explain how the initial crop estimates are prepared and to describe the procedures taken in revising them. The important role played by provincial statisticians is also outlined.

Initial crop estimates are based entirely on data obtained from the producer panel. Correspondents' data are first tabulated and analysed at the sub-provincial geographic level. The basic unit of geographic classification differs among provinces. In the Prairie Provinces this unit is the crop reporting district, in British Columbia it is the agricultural region, and in the other provinces it is the county. For reasons of consistency, crop

-
- ¹ (a) Primary elevators receive grain directly from the producer for storage and forwarding.
(b) Terminal elevators receive grain from primary elevators for official inspection and grading and for cleaning, storing and treating before it is moved forward.
(c) Process elevators receive and store grain for direct manufacture and processing into other products (e.g. flour, oil and meal).
(d) Transfer elevators receive grain, that has been inspected and graded at a terminal elevator, for storage and transfer to ocean vessels, railway cars, or trucks. These elevators are located along the Great Lakes, the St. Lawrence Seaway and the Atlantic Coast.

districts rather than counties or agricultural regions are referred to in the following description.

A map of prairie crop districts is shown on the following page. The districts vary greatly in size and in cultivated area. In Manitoba, for example, district ten had only 220,000 acres whereas district eight had 1,962,000 acres of cultivated land in 1981. Districts were originally established according to geographic-agricultural criteria but over the years boundaries have been redrawn to reflect administrative needs of provincial governments. This classification is nevertheless used because census data are available at the crop district level and district boundaries roughly coincide with the brown and dark brown soil zones.¹

Area: Two surveys request correspondents, as of March 15th and June 1st, to report the areas that they intend to seed or have seeded to each of the principal crops as well as the area assigned to summerfallow. For each crop planted, the correspondent furnishes a figure indicating the area sown in the preceding year and a matching figure for the area intended or already sown in the current year.²

After returned questionnaires are edited for internal consistency, the areas seeded to specific crops are summed for all panel members located in each crop district. The sum of area seeded by correspondents to a crop in the current year is then divided by the sum of area seeded to the same crop in the preceding year. The resulting change ratio³ is multiplied by the previous year's estimate of total crop district area to calculate the current year's total district seeded area. Then, comparisons between districts are

¹ Areas of cropland and summerfallow are shown by crop district in Appendix B.

² Examples of survey questionnaires are shown in Appendix E.

³ There are actually two types of change ratio: one acquires both years' area data from the current questionnaire, and the other obtains this year's data from the current questionnaire and the previous year's data from last year's identical questionnaire. The advantage of the latter ratio is that it eliminates memory bias. However, the number of correspondents which answer both years' area questionnaires varies. To maximize the number of responses, the former ratio is employed and adjusted when there is a significant difference between the two change ratios.

made by crop analysts familiar with growing conditions and cropping practices in the various districts of each province. When data conflict with analysts' expectations, individual returns that are large enough to influence a district total are reviewed and irregular data are deleted. Revised change ratios are calculated and multiplied by last year's district area. Finally, estimates for the province are obtained by summing all district areas.

The above procedure used in expanding raw data may result in the calculated total cropland of a district differing somewhat from district total census cropland. The trend in crop area between the last two censuses is considered in estimating the current year's total district area. Any differences between the trend total district cropland and the estimate derived from panel data is prorated across crops of the district to ensure consistency with census area data.

Stocks: Prairie correspondents are asked in mail questionnaires received on or about March 31st and July 31st, to provide figures for grain stocks held in farm storage regardless of ownership or the number of years accumulated. These stocks cover all marketable quantities of the six major western grains plus reserves for feed and seed. Feed stocks include whole, chopped, rolled and crushed grain with or without commercial supplements added, but exclude brand name commercially prepared feeds. Correspondents are also asked for the total area they seeded to the six major grains and left in summerfallow last year.

The overall procedure used in expanding and evaluating the raw data is somewhat the same as employed on the area data. Stocks of each grain held by all correspondents in a crop district are first summed. These stocks are then expanded through multiplying them by the land-base ratio of the district. The land-base ratio is calculated by dividing the preceding year's estimate of total district area devoted to the six major grains and summerfallow by

the same area cultivated by correspondents in the district. The provincial estimate is arrived at by adding the resulting crop district totals.¹

Data analysis is performed via farm-level supply-disposition balance sheets that for each grain equate supply with disposition. The components of farm supply are: stocks at the beginning of the crop year², imports if any and production. The components of disposition are: producer deliveries to primary elevators, seed requirement, feed-waste & dockage and crop year ending inventories. These farm-level balance sheets are compiled by province and subsequently linked to a more detailed national supply-disposition balance sheet which has several other components on the disposition side (commercial stocks, exports, industrial usage and human consumption).

Balance sheet analysis serves to integrate estimates of farm stocks and production with related data from independent sources. Statistics used in compiling balance sheets are collected from a number of sources besides the producer panel. For example:

- The Canadian Grain Commission provides data on producer deliveries, grain exports plus stocks in commercial channels;
- the External Trade Division of Statistics Canada supplies import and export data on processed grain products; and
- the Manufacturing and Primary Industries Division of Statistics Canada furnishes statistics on domestic processing of grains and oilseeds.³

Yields and Production: Three surveys, mailed out for August 15th, September 15th and at the end of harvest, request figures on probable⁴ and realized average yields per seeded acre. Because considerable areas of oats and

¹ The estimation procedure is different for the non-prairie provinces. Instead of summing responses by geographic areas, responses are summed by farm-size group at the province level. There are five size groups: 3-69, 70-129, 130-179, 180-239, and 240 plus acres. A land-base ratio is calculated for each group by dividing the total panel cultivated area of the previous year by the previous census' total cultivated area. The cultivated area of each group is fairly stable from census to census.

² The crop year runs from August 1 to July 31st.

³ Further information on supply-disposition analysis is provided in [3].

⁴ Probable yields assume normal conditions to harvest.

barley are cut for green feed, these surveys also ask for data on area harvested for grain and yield per harvested acre for each of these two crops. In addition, the last of the three surveys requests figures on areas seeded to fall rye and winter wheat this fall and last fall. Area estimates for these two crops are prepared through employing the same procedures as for the spring-sown crops.

Yields are reported on a field-run basis, that is with no allowance made for dockage. Dockage, which includes weed seeds, broken and unmatured kernels as well as other foreign material, varies by crop and by growing and harvesting conditions. Dockage rates for the six major grains tend to range as follows: oats and barley 1-2%, wheat and rye 2-3%, flaxseed 9-10% and rapeseed/canola 10-12%. Crop reporting statistics differ from grain marketing statistics in that the latter are published on a cleaned basis.

For all crops, except oats and barley, yields are requested per seeded acre rather than per harvested acre in order to reduce correspondents' response burden. It is usually unnecessary to obtain both yields because seeded area tends to be almost the same as harvested area. In certain years, however, when weather conditions are extreme and large seeded areas are plowed under, a special survey is conducted to generate data on harvested area.

Average panel yields for each crop are computed by crop district. For most crops, production estimates are obtained through multiplying the district average yields by district June seeded areas. The oats and barley June area estimates are adjusted to cover only those areas harvested for grain. Estimated provincial production is the sum of district production quantities while estimated provincial average yield is total provincial production divided by total provincial acreage.

Initial estimates are first evaluated through comparing each crop's average district yields with the historical district pattern, and then through comparing average district yields of correspondents with the results of a supplementary survey of more than one thousand primary elevator managers. Data from managers are allocated by district. Should discrepancies arise in the historical comparison, that are unexplained in terms of varying growing conditions, the survey data are reviewed to determine if extreme values are

influencing district averages. Differences between correspondent and elevator manager average yields are usually small but may be as high as two bushels per acre. Margins approaching this magnitude lead to close scrutiny of data and provincial agricultural statisticians are often consulted in resolving the matter.

Another yield survey, conducted in December, gathers data on planted areas and yields for each of the major grains sown on stubble and summerfallow land¹ in the prairie region. The yield and area data are summed by individual grain at the crop district level. Average yields from summerfallow and stubble land are calculated. A percentage breakdown is made between area seeded on each type of land. The two percentages are applied to the latest estimate of the total district area devoted to the crop in order to estimate district area seeded on stubble and summerfallow land. These two area estimates are then multiplied by average panel yields to obtain district estimates of production from fallow and stubble land. When production estimates are summed across districts and the stubble and fallow totals added, the result seldom exactly equals the crop's published November production estimate for the province. The minor difference between these two figures is prorated among districts so that stubble plus fallow production for the province equals the November published estimate.

Provincial Contribution: Under formal agreement, provincial departments of agriculture in Quebec, Ontario and British Columbia are authorized by Statistics Canada to edit questionnaires from correspondents within their province and to make crop estimates. These provincial departments have undertaken to ensure the strict confidence of individual data provided by correspondents who have consented to this sharing arrangement. Statistics Canada and the provinces have also agreed to consult one another regarding publication of survey results. Estimates made by the three provinces are included in published STC crop reports.

¹ Summerfallow land is cultivated but no crop grown on it in the previous growing season whereas a crop was harvested from stubble land in the previous season. The main benefits derived from summerfallowing are: increased soil moisture, weed and insect control and available nutrients, especially nitrogen. When crops are sown on stubble land, heavier applications of fertilizer and herbicide are frequently used to compensate for summerfallow benefits.

Crop questionnaires from prairie correspondents are processed in Statistics Canada's central office while those from the Maritimes are processed at the Agriculture Statistics Division's regional office in Truro, Nova Scotia. After corrected initial estimates are prepared by prairie crop district, they are forwarded to the respective provincial agriculture statisticians. Each of these statisticians then compares STC estimates with the results of a limited survey of extension personnel and farmers distributed throughout the province. Where discrepancies occur between the two independent sets of estimates, feedback is obtained from local agricultural representatives. Proposed revisions are returned to Statistics Canada and mutually acceptable estimates are arrived at through discussion. Dialogue between provincial and STC statisticians focuses mainly on the major crops since smaller crops, often grown in concentrated areas or under contract, are monitored by the provincial departments of agriculture.

Prairie provincial crop statisticians meet in a lock-up style meeting on the morning of the day the July 31st stocks estimates are released. Other participants at this meeting are: STC crop and grain marketing specialists, representatives from the Canadian Grain Commission and the Canadian Wheat Board. The objective is to evaluate initial estimates of farm inventories at the end of the crop year via supply-disposition analysis. The provincial participants provide valuable input, particularly regarding quantities of grain fed to livestock during the past year. The amount fed depends on such factors as livestock numbers, winter temperatures, grain-livestock price ratios and on-farm stocks of grain. The provincial statisticians frequently have detailed information on how these factors have affected feed usage in their provinces. Scrutiny of the amount of grain fed is of critical importance since feed-waste & dockage is the residually-determined component of the supply-disposition balance sheet.

Revisions: Published estimates are subject to revision pending further data. Estimates are prepared under a strict time constraint and there is, to some extent, a trade-off between precision and timeliness. Much of the information employed in establishing precision is available later in the season or

after the crop year. For example, June area estimates are sometimes revised on the basis of results of the July enumerative surveys. Similarly, revisions of stocks and production estimates are largely based on supply-disposition analysis that pulls together market data released at the end of the crop year.

Most adjustments to the area estimates depend on the July enumerative surveys and on the Census. Revisions based on data generated in enumerative surveys are made in the same growing season. However, as already mentioned, the processing of figures from census questionnaires takes about ten months. Once census data are released, they are considered the most accurate available and replace the previous year's set of area estimates. The census results are of critical importance in making crop estimates because census area statistics are the benchmarks that change ratios are applied to in the season subsequent to census year. Census data are thus said to 'true up' the estimates every five years.

Census data result in extensive revisions to published estimates. Comparison of 1981 census area statistics with crop area estimates, published in November 1981, indicated that percentage differences between census and November figures were usually small as regards commercially significant crops. For each of the six major grains at the Canada level, percentage differences were less than two per cent for wheat, barley for grain, rye and flaxseed; rape-seed/canola and oats for grain percentages were respectively 3.4% and 12.5%. At the Prairie level, the differences were much the same but the durum wheat area fell 8.3% short of the census acreage. Percentage differences tended to be higher at the provincial level. In Ontario, however, the percentages for the principal grains were all less than three per cent with the exception of the corn for grain estimate at 3.2% less than the census area. Generally, differences between the two statistics were attributable to changes in total cultivated area between censuses and to sampling variation.

Census data are the basis for revising crop estimates for inter-censal years. These changes are carried out by STC and provincial agriculture statisticians. Inter-censal revisions are usually completed within several months of

the census release date and result in changes for most crops of less than two per cent.

Revisions are made throughout the year. When made, they are shown in the subsequent report. Revisions are denoted by a superscript r and are indicated only once.

The August report usually contains the most numerous adjustments due to tabulation of the July enumerative surveys and to analysis of July 31st supply-disposition balance sheets being completed prior to publication of this report. Census area data are usually presented in the June report of the year following the Census and the impact of these area changes on production is shown in the August report.

Accuracy of Forecasts

Just how accurate are crop forecasts? This is a valid question, especially when asked by persons who rely on forecasts in developing their production or market plans. Two crop bulletins which have considerable impact on these plans are the March seeding intentions report and the August production report. The August bulletin forecasts production based on expected yields whereas the March bulletin is a statement of producer intentions at one point in time. Nonetheless, March intended area is commonly used to forecast June seeded area. To aid users in evaluating the risks associated with acting on a given statistic in either of these reports, measures of past reliability are calculated for each of the major grains and oilseeds.

The most common measures of forecasting performance are the Mean Absolute Percent Error (MAPE) and the Root Mean Square Error (RMSE). The MAPE is calculated by taking the difference between the forecasted quantity and the final estimated quantity (the error), expressing it as a percentage of the final estimated quantity, and obtaining an average. The sign of the error is disregarded to eliminate the possibility of positive and negative errors cancelling. The RMSE is quite similar except that the per cent error is squared, an average squared error obtained, and the square root taken of the

Table 2. Differentials Between March Intended and Final Estimated Seeded Areas, Selected Grains, Canada, 1971-80.

Crop	Root Mean Square Error	Mean Absolute Percent Error	Number of Years Intentions	
			Below Final	Above Final
	per cent		years	
All wheat	7.4	4.6	5	5
Oats*	8.3	7.3	0	10
Barley*	4.2	3.4	4	6
Flaxseed	17.9	16.2	4	6
Rapeseed/Canola	15.7	12.7	6	4
Grain Corn	6.6	5.7	8	2
Summerfallow	4.8	3.6	7	3

* Includes areas sown for all purposes.

Table 3. Differentials Between August 15th Production Forecasts and Final Estimated Production, Selected Grains, Canada, 1971-80.

Crop	Root Mean Square Error	Mean Absolute Percent Error	Number of Years Forecasts	
			Below Final	Above Final
	per cent		years	
All Wheat	6.7	5.8	7	3
Oats for Grain	5.3	3.4	5	5
Barley for Grain	5.3	4.3	7	3
Flaxseed	13.6	9.6	3	6
Rapeseed/Canola	11.1	9.1	4	6
Grain Corn**	7.1	5.9	7	3

** September 15th forecasts are compared with final estimates because August 15th forecasts for this crop commenced in 1981.

average. Squaring the error does two things: it eliminates cancelling and assigns more importance to large errors. The RMSE is thus a more sensitive indicator of prediction performance.

Values for both measures are presented in Tables 2 and 3 for the 1971-80 period. A comparison of the RMSE's in Table 2 indicates that March intention forecasts are most reliable for barley and summerfallow; are of intermediate reliability for grain corn, wheat and oats; and are least reliable for the oilseeds. Flaxseed and rapeseed/canola areas are more difficult to forecast because growers of these crops are sensitive to changing market forces and these crops are grown in many areas where producers have a wide range of crop options. In reading this table, it is noteworthy that oats projections were higher than final area estimates for all ten years. A comparison of the RMSE's in both tables shows a similar pattern among crops except that the oats for grain production forecast is the most reliable. In Table 3, the RMSE's for the oilseeds are again relatively high. Correspondents are less precise in predicting oilseed yields because these crops are more susceptible to frost and there is wider variation in yields within a field than for cereal grains. Overall, the values of Table 3 are usually lower than those of Table 2 because farmers' March intentions are flexible and may be influenced by marketing and climatic factors whereas August production forecasts are affected by natural events (e.g. hail, frost) occurring over a more limited period.

Measures of forecast performance, besides assisting users, are employed by statisticians to evaluate their methods and procedures. Discrepancies between forecasts and final estimates are monitored and explanations are sought in terms of the relevant factors at the time.

Data Dissemination

Crop reports are distributed through the mail and statistics at the prairie province and Canada levels are released through telex. Since crop information is important to the agriculture sector and the national economy, the statistics are carried in the major news media and on commodity wire

services. The data may affect prices at commodity exchanges. Consequently, the statistics are released on a Friday at 3:00 P.M. EST after commodity exchanges in North America have closed, to ensure that all traders act on the same objective information. STC personnel are forbidden from participating in a commodity market or from using their statistics for personal gain. Further, they have sworn not to disclose or to permit another person access to statistics prior to publication.

Crop statistics may also be obtained through telephoning the Crop Reporting Unit at (613) 995-4877 or the Winnipeg regional office at (204) 949-6085 after 3 P.M. on the release date. Telex is arranged by contacting the Unit at the above number.

CANSIM: Historical crop statistics are retrievable through the Canadian Socio-Economic Information Management System (CANSIM), Statistics Canada's computerised data-base. It may be used by anyone regardless of the extent of his/her computer knowledge or skill. CANSIM is a simple and effective way of obtaining all the data on the historical record. The data are regularly updated and are the most current in terms of the revision process.

Crop estimates are available via computer terminal, printouts or in machine readable form for the following five categories:

- 1) Area, Yield, Production and Farm Value;
- 2) Stages of Development for Spring Wheat by Crop Districts, Prairie Provinces;
- 3) Seeded Acreage by Crop Districts for Wheat, Oats, Barley and Summerfallow;
- 4) Yield by Crop District for Wheat, Oats and Barley; and
- 5) Farm Stocks of Wheat, Oats, Barley, Rye, Rapeseed and Flaxseed in the Prairie Provinces.

Crop statistics are on the CANSIM Main Base. To retrieve data, refer to the CANSIM Summary Reference Index for matrix identification numbers. These four-digit numbers form the key to the CANSIM Main Base Series Directory which provides a detailed description of specific variables, called "series",

filed under a matrix number. For each "series", the Directory gives the title, start data and two identification numbers - either one of which may be used to retrieve a "series".

A detailed list of crop matrix identification numbers is provided in Appendix D. For each matrix number, a start year and a final year is shown, where applicable, as well as the provinces and regions that data are available for. The last page of the Appendix provides an example of the "series" format. A specific "series" is identified by the matrix number plus series number or just the data bank number (see last page of Appendix D).

Users, not having a computer terminal, may telephone their requests to the Data Dissemination Unit, Agriculture Statistics Division at (613) 995-8411, or to one of the User Advisory offices listed below. In contacting these offices, it is usually sufficient to give the relevant matrix number(s), the range of years and the province or region that data are required for. The offices are equipped with a computer terminal to access CANSIM. Data are retrieved on a cost recovery basis and can be mailed to you.

St. John's	Tel: 722-4073	Winnipeg	Tel: 949-4020
Halifax	Tel: 426-5331	Regina	Tel: 359-5405
Montreal	Tel: 283-5725	Edmonton	Tel: 420-3027
Toronto	Tel: 966-6586	Vancouver	Tel: 544-6478
Ottawa	Tel: 995-0575		

For persons located outside of the above cities, toll-free lines are available as follows:

British Columbia	(112)-800-663-1551
Alberta	1-800-667-3524
Saskatchewan	(112)-800-667-3524
Manitoba	1-800-282-8006
Ontario	1-800-268-1150
Quebec	1-800-361-2831
New Brunswick, Prince Edward Island and Nova Scotia	1-800-565-7192
Newfoundland	Zenith 0-7037

Users, having a terminal, may arrange access to CANSIM through contacting the CANSIM Division at (613) 995-7406 or one of the User Advisory offices. Information on access procedures to and data retrievals from the CANSIM Main Base are contained in the CANSIM Interactive System Users Manual for access in interactive mode, and in the CANSIM User Manual for Data Retrieval and Manipulation for access in batch mode or when using a card reader/printer.

New Developments

The preparation of crop estimates has been based on methods that have evolved over more than fifty years. The success of these methods has been largely attributable to the availability of census benchmark data and to the statisticians involved in managing the panel and in revising the estimates. The statisticians must be knowledgeable of cropping patterns and of the applications of innovations (e.g. irrigation) which affect these patterns. During the last few years, there has been an effort to examine other data sources that require less input from commodity specialists and that improve the precision of crop estimates. Probability surveys and remote sensing have received particular attention.

The Agriculture Statistics Division has conducted annual probability surveys since 1971. The AES and FES currently furnish crop estimates for seeded area. There is also a possibility of operating regular probability surveys through the year to gather intentions, stock and yield data. Probability surveys either randomly select segments of land and send enumerators out to interview farmers with operations in each segment, or have enumerators take biological measurements on randomly chosen plots of land. The advantage in moving to the probability survey is that representativeness is no longer an issue and it is possible to measure the precision of estimates. There is no question that it is technically feasible to generate a wide range of crop data through probability surveys. However, the basic limitation encountered in adopting this approach is the cost of enumerating thousands of farmers or plots of land within a limited span of time. In view of the cost of

organising and mobilising enumerators, it may be more practicable to carry out some surveys by telephone rather than by enumeration.

Remote sensing records information about properties of an object on the earth's surface from an aircraft and/or satellite.¹ It works on the principle that different crops have varying levels of light reflectance. Since 1975 the Agriculture Statistics Division, in conjunction with the Canada Centre for Remote Sensing, has been conducting on-going studies in which satellite imagery has been collected for potato area in New Brunswick and for rapeseed/canola area in the Peace River District. Although results to date have been promising, remote sensing is still at a developmental stage. There remain certain obstacles to its extensive application. Cloud cover, for example, presently poses a problem and not all crops are easily identifiable. Technological advances in remote sensing are nevertheless occurring at a rapid pace. When the system is fully operational, a substantial volume of accurate area and yield data will be gathered with farmers experiencing very little or no response burden.

¹ For an elementary explanation of remote sensing see [4], and for a discussion of its usefulness in agriculture see [11].

References

- [1] Agriculture Canada, A Review of the Canadian Agriculture and Food Complex - the Commodities, Volume I, Part B, Ottawa: 1977.
- [2] Canadian Grain Commission, "Grain Statistics Weekly - Explanatory Notes", Winnipeg: 1974.
- [3] Elward, Mark, "Grain Marketing Statistics Methodology", Statistics Canada, Agriculture Statistics Division, forthcoming.
- [4] Harper, Edith, Eye in the Sky: Introduction to Remote Sensing, Montreal: Multiscience Publications, 1976.
- [5] Johnson, D. Gale, "The Impact of Freer Trade on North American Agriculture", American Journal of Agricultural Economics, Vol. 55, No. 2, (May, 1973), pp. 294 - 300.
- [6] Labrosse, G. and E. McSorley, Canada's Trade in Agricultural Products, 1978, 1979 and 1980, Ottawa: Agriculture Canada, 1981.
- [7] Statistics Canada, CANSIM Summary Reference Index, Catalogue No. 12-202E.
- [8] Statistics Canada, CANSIM Main Base Series Directory, Catalogue No. 12-203E.
- [9] Statistics Canada, CANSIM Interactive System Users Manual, Catalogue No. 12-553E.
- [10] Statistics Canada, CANSIM User Manual of Data Retrieval and Manipulation, Catalogue No. 12-531E.
- [11] Thaman, Randolph R., "Remote Sensing of Agricultural Resources", in Estes, John E. and Leslie W. Senger, editors, Remote Sensing: Techniques for Environmental Analysis, New York: John Wiley & Son, 1974.

APPENDICES

Appendix A. Field Crop Reporting Series, Titles and Release Dates

No.	Title	1983 Release Dates
1.	SUMMERFALLOW AND STUBBLE, AREA AND YIELD OF MAJOR CROPS, PRAIRIE PROVINCES.	Jan. 28
2.	MARCH INTENTIONS OF PRINCIPAL FIELD CROP AREA.	April 8
3.	STOCKS OF CANADIAN GRAIN AT MARCH 31.	April 22
4.	PRELIMINARY ESTIMATES OF CROP AND SUMMERFALLOW AREA.	June 24
5.	STOCKS OF CANADIAN GRAIN AT JULY 31.	Aug. 19
6.	AUGUST FORECAST OF PRODUCTION OF PRINCIPAL FIELD CROPS.	Sept. 2
7.	SEPTEMBER FORECAST OF PRODUCTION OF PRINCIPAL FIELD CROPS.	Oct. 7
8.	NOVEMBER ESTIMATE OF PRODUCTION OF PRINCIPAL FIELD CROPS.	Late Nov.

To be placed on the subscription list for the Field Crop Reporting Series, indicate your name, address and catalogue number of the Series (22-002) in a note, enclose a \$10 cheque or money order (\$12 outside Canada) payable to the Receiver General for Canada, and forward to:

Publications, Sales and Services
User Services Division
Statistics Canada
Ottawa, Ontario
K1A 0V7

Crop Coverage of the Reports

Subject of Report	Barley	Beans, Dry	Buckwheat	Corn for Grain	Flaxseed	Fodder Corn	Hay, Tame	Mixed Grain	Mustard Seed	Oats	Peas, Dry	Rapeseed/Canola	Rye	Soybeans	Sugar Beets	Sunflower Seed	Wheat	Summerfallow	Lentils
Summerfallow & Stubble ¹	X																		
March 31 Stocks	X																	X	
July 31 Stocks	X																	X	
March Intended Area	X																	X	
June Seeded Area	X																	X	
Aug. Production Forecasts	X																		
Sept. Production Forecasts	X																		
Nov. Production Estimates	X																		

¹ Prairie Provinces Only

Appendix B. Cultivated Area in Crop Districts, 1981

	Crop District	Cropland*	Fallow	Total Cultivated Land
'000 acres				
<u>Manitoba</u>				
	1	1,231	145	1,376
	2	1,195	187	1,382
	3	1,059	282	1,341
	4	445	147	592
	5	448	103	551
	6	835	170	1,005
	7	1,617	108	1,725
	8	1,885	77	1,962
	9	868	66	934
	10	192	28	220
	11	549	67	616
	12	599	99	698
TOTAL		10,923	1,479	12,402
<u>Saskatchewan</u>				
	1A	1,385	728	2,113
	1B	1,178	566	1,744
	2A	1,068	696	1,764
	2B	1,502	976	2,478
	3AS	1,413	1,072	2,485
	3AN	807	665	1,472
	3BS	981	829	1,810
	3BN	1,462	1,163	2,625
	4A	658	478	1,136
	4B	798	666	1,464
	5A	1,992	1,021	3,013
	5B	2,190	1,026	3,216
	6A	2,150	1,442	3,592
	6B	1,747	1,041	2,788
	7A	1,479	1,077	2,556
	7B	1,282	843	2,125
	8A	1,553	399	1,952
	8B	1,561	578	2,139
	9A	2,143	802	2,945
	9B	1,664	500	2,164
TOTAL		29,013	16,568	45,581

Appendix B. Cultivated Area in Crop Districts, 1981 - concluded

Crop District	Cropland*	Fallow	Total Cultivated Land
<hr/>			
'000 acres			
<hr/>			
<u>Alberta</u>			
1	1,808	1,227	3,035
2	3,588	1,506	5,094
3	2,455	356	2,811
4A	2,083	552	2,635
4B	2,598	525	3,123
5	2,983	247	3,230
6	2,276	288	2,564
7	3,069	748	3,817
TOTAL	20,860	5,449	26,309

*Cropland is the area sown for harvest in 1981. Cropland includes the total area of field crops, plus the area of fruits, vegetables, greenhouses, mushroom house and nursery products.

Source: 1981 Census of Agriculture.

Appendix C. Metric Conversion Factors

BUSHEL EQUIVALENTS PER METRIC TONNE	
GRAIN	BUSHEL EQUIVALENT
Wheat	36.744
Oats	64.842
Barley	45.930
Rye	39.368
Flaxseed	39.368
Rapeseed	44.092
Corn	39.368
Soybeans	36.744
Peas	36.744
Buckwheat	45.930
Mustard seed	44.092
Sunflower seed	91.859
To convert:	
Bushels to tonnes – divide by equivalent	
Tonnes to bushels – multiply by equivalent	
e.g. wheat:	
1000 bu. = $1000 \div 36.74 = 27.22$ metric tonnes	
100 metric tonnes = $100 \times 36.74 = 3,674$ bu.	

Acres to hectares			
Acres	Hectares	Acres	Hectares
1 = 0.4		100 = 40	
2.5 = 1.0		200 = 81	
3 = 1.2		300 = 121	
4 = 1.6		400 = 162	
5 = 2.0		500 = 202	
6 = 2.4		600 = 243	
7 = 2.8		700 = 283	
8 = 3.2		800 = 324	
9 = 3.6		900 = 364	
10 = 4			
20 = 8			
30 = 12			
40 = 16			
50 = 20			
60 = 24			
70 = 28			
80 = 32			
90 = 36			

QUICK GRAIN YIELD CONVERSIONS					
Bushels per acre	Wheat soybeans peas	Oats	Barley & buckwheat	Corn rye flaxseed	Rapeseed mustard seed
– kilograms per hectare –					
1	67	38	54	63	56
5	340	190	270	310	280
10	670	380	540	630	560
15	1010	570	810	940	840
20	1340	760	1080	1260	1120
25	1680	950	1340	1570	1400
30	2020	1140	1610	1880	1680
35	2350	1330	1880	2200	1960
40	2690	1520	2150	2510	2240
45	3030	1710	2420	2820	2520
50	3360	1910	2690	3140	2800
55	3700	2100	2960	3450	3080
60	4040	2290	3230	3770	3360
65	4370	2480	3500	4080	3640
70	4710	2670	3770	4390	3920
75	5040	2860	4040	4710	4200
80	5380	3050	4300	5020	4480
85	5720	3240	4590	5340	4760
90	6050	3430	4860	5650	5040
95	6390	3620	5130	5960	5320
100	6730	3810	5400	6280	5600

one kilogram = 2.2 pounds
 1000 kilograms = one (metric) tonne
 one (metric) tonne = 1.1 (imperial) ton
 10 cwt./acre = 1120 kg/ha
 1 ton/acre = 2.24 tonnes/ha

Appendix D. Field Crop Data on CANSIM

Acreage, Yield, Production and Farm Value, by Crop District	CANSIM Matrix Number	Start Year	Final Year	Region or Province
All Wheat	1025	1908		Canada, Maritimes, Prairies, all Provinces
Spring Wheat	1026	1908		Canada, ON
Spring Wheat	1026	1941		Maritimes, Prairies, all Provinces (except ON)
Winter Wheat	1027	1908	1977	ON
Winter Wheat	1027	1978		Includes AB
Durum Wheat	1028	1941		Prairies, MB, SK, AB
Oats	1029	1908		Canada, Maritimes, Prairies, all Provs (except BC)
Oats	1029	1910		BC
Barley	1030	1908		Canada, Maritimes, Prairies, all Provs (except BC)
Barley	1030	1910		BC
All Rye	1031	1908		Canada, Prairies, PQ, ON, MB, SK, AB
All Rye	1031	1908	1930	NS, NB
All Rye	1031	1910		BC
Fall Rye	1032	1923		Canada, MB, SK, AB
Spring Rye	1033	1923		Canada, MB, SK, AB
Mixed Grain	1034	1908		Canada, Maritimes, PE, NS, NB, PQ
Mixed Grain	1034	1910		Prairies, MB, SK, AB, BC
Corn for Grain	1035	1908		Canada ON
Corn for Grain	1035	1908	1931	PQ
Corn for Grain	1035	1966		PQ
Corn for Grain	1035	1941		MB
Corn for Grain	1035	1979		AB
Buckwheat	1036	1908		Canada, NB, PQ, ON
Buckwheat	1036	1908	1940	PE, NS
Buckwheat	1036	1925		MB
Buckwheat	1036	1969	1973	SK
Buckwheat	1036	1969	1971	AB
Peas, Dry	1037	1908		Canada MB
Peas, Dry	1037	1908	1930	PE, NS, NB
Peas, Dry	1037	1908	1975	PQ
Peas, Dry	1037	1908	1974	ON
Peas, Dry	1037	1910		Prairies, SK, AB, BC
Beans, Dry	1038	1908		Canada ON
Beans, Dry	1038	1908	1930	NS
Beans, Dry	1038	1918	1938	SK
Beans, Dry	1038	1918	1940	NB, AB
Beans, Dry	1038	1910	1940	BC
Beans, Dry	1038	1908	1975	PQ

Appendix D. Field Crop Data on CANSIM - continued

Acres, Yield, Production and Farm Value, by Crop District	CANSIM Matrix Number	Start Year	Final Year	Region or Province
Flaxseed	1039	1908		Canada, Prairies, MB, SK, AB
Flaxseed	1039	1910	1939	PQ
Flaxseed	1039	1960	1971	PQ
Flaxseed	1039	1910	1972	ON
Flaxseed	1039	1924	1971	BC
Soybeans	1040	1941		Canada, ON
Soybeans	1040	1956	1960	MB
Mustard Seed	1041	1951		Canada, AB
Mustard Seed	1041	1952		MB
Mustard Seed	1041	1960		SK
Rapeseed	1042	1943		Canada, Prairies, SK
Rapeseed	1042	1943	1946	MB
Rapeseed	1042	1952		MB
Rapeseed	1042	1955		AB
Rapeseed	1042	1967		BC
Sunflower Seed	1043	1943		Canada, MB
Sunflower Seed	1043	1943	1945	SK
Sunflower Seed	1043	1963		SK
Sunflower Seed	1043	1943	1943	AB
Sunflower Seed	1043	1958	1973	AB
Field Roots	1045	1908	1940	Prairies, MB, SK, AB
Field Roots	1045	1910	1951	BC
Field Roots	1045	1908	1974	ON
Field Roots	1045	1908	1976	Canada, Maritimes, PE, NS, NB, PQ
Sugar Beets	1046	1908		Canada
Sugar Beets	1046	1940		MB
Sugar Beets	1046	1944		PQ
Sugar Beets	1046	1908	1967	ON
Sugar Beets	1046	1925		Prairies, AB
Tame Hay	1047	1908		Canada, Maritimes, Prairies, all Provinces (except BC)
Tame Hay	1047	1910		BC
Fodder Corn	1048	1908		Canada, PQ, ON, MB
Fodder Corn	1048	1908	1940	PE, NS, NB
Fodder Corn	1048	1975		PE, NS, NB
Fodder Corn	1048	1910	1971	SK
Fodder Corn	1048	1910	1952	AB
Fodder Corn	1048	1978		AB
Fodder Corn	1048	1910		Prairies, BC

Note: Data excludes Newfoundland.

Appendix D. Field Crop Data on CANSIM - concluded

	CANSIM Matrix Number	Start Year	Final Year
<hr/> Stages of development and Harvesting for Spring Wheat for the Prairie Provinces, Annual, Month/Day <hr/>			
Alberta	2645	1956	
Saskatchewan	2646	1952	
Manitoba	2647T	1952*	1977
Manitoba	2648	1977**	
<hr/> Seeded Acreage by Crop Districts for Wheat, Oats, Barley and Summerfallow in the Prairie Provinces <hr/>			
Alberta	2657	1961	
Saskatchewan	2658	1961	
Manitoba	2659T	1961*	1977
Manitoba	2660	1977**	
<hr/> Yield by Crop Districts for Wheat, Oats, Barley in the Prairie Provinces <hr/>			
Alberta	1411	1961	
Saskatchewan	1412	1961	
Manitoba	1413T	1961*	1977
Manitoba	1414	1977**	
<hr/> Farm Stocks for the Major Grains in the Prairie Provinces <hr/>			
Alberta	1408	1961	
Saskatchewan	1409	1961	
Manitoba	1410	1961	
<hr/> Pasture Acreage by Province, Annual <hr/>			
All Provinces	5686	1951	

* 1952 to 1977 is presented in 14 crop districts.

** From 1977 on data are presented in the newly assigned 12 crop districts.

Example of "Series" Format in the CANSIM Main Base Series Directory

001025

ESTIMATED ACREAGE, YIELD, PRODUCTION, AVERAGE FARM PRICE AND TOTAL FARM VALUE FOR ALL WHEAT - CANADA AND PROVINCES BY CROP YEARS BEGINNING 1908-09.

matrix number

matrix title

1	SEEDED ACREAGE, ALL WHEAT - CANADA	08-00-00	PU	D 230001
1.1	SEEDED ACREAGE, ALL WHEAT - MARITIMES	08-00-00	PU	D 230002
1.1.1	SEEDED ACREAGE, ALL WHEAT - P. E. I.	08-00-00	PU	D 230003
1.1.2	SEEDED ACREAGE, ALL WHEAT - NOVA SCOTIA	08-00-00	PU	D 230004
1.1.3	SEEDED ACREAGE, ALL WHEAT - NEW BRUNSWICK	08-00-00	PU	D 230005
1.2	SEEDED ACREAGE, ALL WHEAT - QUEBEC	08-00-00	PU	D 230006
1.3	SEEDED ACREAGE, ALL WHEAT - ONTARIO	08-00-00	PU	D 230007
1.4	SEEDED ACREAGE, ALL WHEAT - PRAIRIE PROV'S.	08-00-00	PU	D 230008
1.4.1	SEEDED ACREAGE, ALL WHEAT - MANITOBA	08-00-00	PU	D 230009
1.4.2	SEEDED ACREAGE, ALL WHEAT - SASKATCHEWAN	08-00-00	PU	D 230010
1.4.3	SEEDED ACREAGE, ALL WHEAT - ALBERTA	08-00-00	PU	D 230011
1.5	SEEDED ACREAGE, ALL WHEAT - B. C.	08-00-00	PU	D 230012
2	AV. YIELD PER ACRE, ALL WHEAT - CANADA	08-00-00	PU	D 230013
2.1	AV. YIELD PER ACRE, ALL WHEAT - MARITIMES	08-00-00	PU	D 230014
2.1.1	AV. YIELD PER ACRE, ALL WHEAT - P. E. I.	08-00-00	PU	D 230015
2.1.2	AV. YIELD PER ACRE, ALL WHEAT - NOVA SCOTIA	08-00-00	PU	D 230016

series number

series title

start year (1908)

data bank number

security classification

STATISTICS CANADA – OTTAWA IN CO-OPERATION WITH PROVINCIAL DEPARTMENTS

Saskatchewan and British Columbia residents please note:

To avoid duplication of enquiry and to reduce the cost of data collection, this survey is conducted under a co-operative agreement made in accordance with Section 11 of the Statistics Act, for the joint collection and sharing of information pertaining to Saskatchewan residents with the Saskatchewan Department of Agriculture and British Columbia residents with the British Columbia Ministry of Agriculture and Food.

If you object to sharing this information, please inform us in writing and mail your letter, along with the completed questionnaire, to the Agriculture Statistics Division of Statistics Canada, Ottawa, Ont. K1A 0T6.

SURVEY OF FIELD CROP AREAS FOR 1982

Results of this survey will be used as the basis of a report to be published June 25 providing an official indication of field crop areas and conditions affecting development of the 1982 crop. All estimates made by correspondents are held strictly confidential, being grouped with other returns for statistical purposes only.

800



Authority – Statistics Act, Chapter 15
Statutes of Canada 1970 - 71 - 72.

Please correct any mistakes in Name or Address

(W.C.)

SI VOUS PRÉFÉREZ CE QUESTIONNAIRE
EN FRANÇAIS, VEUILLEZ COCHER ☐

WINTERKILLING OF CROPS IN YOUR NEIGHBOURHOOD

What percentage of last fall's acreage has been winterkilled?

Where a crop is not grown, please write in X.

Crop		Percentage winterkilled
Tame hay (including clover and alfalfa)	240	%
Fall rye	241	%
Winter wheat	242	%

SPRING WHEAT SEEDING DATES IN YOUR NEIGHBOURHOOD, 1982

Please indicate the following dates concerning spring wheat in your neighbourhood this year.

		DATE
1. Earliest date of seeding	260	
2. Date seeding general	261	
3. Date seeding completed	262	
4. Earliest appearance above ground	263	

PLEASE ANSWER QUESTIONS ON OTHER SIDE

AREA SEEDED OR TO BE SEEDDED ON YOUR FARM

PLEASE CHECK (✓) the unit you wish to use in your estimates:

Acres ☐ or Hectares ☐

Crop	1981	1982
1. SPRING WHEAT	103	203
2. DURUM WHEAT	104	204
3. UTILITY WHEAT	105	205
4. WINTER WHEAT (harvested or to be harvested)	106	206
5. OATS	108	208
6. BARLEY	109	209
7. SPRING RYE	110	210
8. FALL RYE (harvested or to be harvested)	112	212
9. MIXED GRAINS (two or more grains sown together) . . .	113	213
10. FLAXSEED	114	214
11. RAPESEED AND CANOLA	115	215
12. MUSTARD SEED	124	224
13. SUNFLOWER SEED	130	230
14. BUCKWHEAT	126	226
15. PEAS, DRY	123	223
16. LENTILS	131	231
17. POTATOES	118	218
18. CORN FOR GRAIN	116	216
19. CORN FOR FODDER AND ENSILAGE	117	217
20. SUMMERFALLOW	119	219
21. TAME HAY and clover for hay, ensilage and seed	120	220
22. SEEDDED PASTURE	122	222
23. OTHER CROPS (Please specify)	125	225
24. TOTAL CULTIVATED LAND (Items 1 - 23)	102	202
25. OTHER LAND (woodland, wild hay, wasteland)	135	235
26. TOTAL AREA OF YOUR FARM (Items 24 and 25) (include land rented from others)	101	201

PLEASE COMPLETE FORM AND MAIL IN ENCLOSED POST-FREE ENVELOPE
AS SOON AS POSSIBLE

Saskatchewan and British Columbia residents please note:

To avoid duplication of enquiry and to reduce the cost of data collection, this survey is conducted under a co-operative agreement made in accordance with Section II of the Statistics Act, for the joint collection and sharing of information pertaining to Saskatchewan residents with the Saskatchewan Department of Agriculture and the British Columbia residents with the British Columbia Ministry of Agriculture and Food.

If you object to sharing this information, please inform us in writing and mail your letter, along with the completed questionnaire, to the Agriculture Statistics Division of Statistics Canada, Ottawa, Ont. K1A 0T6.

SURVEY OF GRAIN IN STORAGE ON FARMS, JULY 31, 1982

This information is required to estimate the total amount of grains held on all farms and will be used as a basis of a report to be published on August 20, 1982. Your individual report will be treated in strictest confidence. By law its contents may not be disclosed to any person or agency other than the authorized statistical workers.

Authority – Statistics Act, Chapter 15,
Statutes of Canada 1970-71-72.

Si vous préférez ce questionnaire
en français, veuillez cocher ☐

800 ☐

(W.C.)

Please correct any mistakes in Name or Address

GRAIN IN STORAGE ON FARMS

At July 31, 1982 what amounts of marketable grains plus seed, feed and other reserves, regardless of ownership, were in storage on the farm you operate?

Include grain and chop bought as well as all old crop grain.

Exclude any new crop grain, brand name feeds purchased, and grains owned by you but stored off the farm you operate.

Please respond in either **Bushels** or **Metric Tonnes**.

Grain (Whole, chopped, rolled or crushed)		Bushels	Metric tonnes
1. Wheat (do not include durum)	238		
2. Oats	239		
3. Barley	240		
4. Mixed grains (two or more grains sown together)	265		
5. Rye	241		
6. Flaxseed	242		
7. Rapeseed and canola	243		
8. Durum wheat	244		

GRAIN FED ON FARMS

What amounts of grain were fed to livestock and poultry on your farm between August 1, 1981 and July 31, 1982?

NOTE: Include grain and chop bought as well as grain grown on your own farm. (Exclude prepared feeds purchased)

Grain (Whole, chopped, rolled or crushed)		Bushels	Metric tonnes
1. Wheat	268		
2. Oats	269		
3. Barley	270		

SIZE OF FARM

Please respond in either Acres or Hectares		Acres	Hectares
1. Total area of all wheat, oats, barley, rye, flaxseed, rapeseed and summerfallow in 1981.	273		
2. Total area of farm (Include all land owned and rented in 1981)	201		

PLEASE COMPLETE FORM AND IF POSSIBLE, MAIL IN
ENCLOSED POST-FREE ENVELOPE BY SATURDAY, JULY 31, 1982

SURVEY OF WHEAT GRADES

Estimated Percentage of the Bread Wheat Crop in storage at July 31 on your farm that will go in Grade.			
No. 1 C.W. Red Spring Wheat	No. 2 C.W. Red Spring Wheat	No. 3 C.W. Red Spring Wheat	Other Grades
+ + +			
274 %	275 %	276 %	277 %

= 100 %

OCTOBER SURVEY OF ESTIMATED YIELDS, FALL-SOWN CROPS
AND HARVESTING PROGRESS, 1982

Authority, Statistics Act, Chapter 15,
Statutes of Canada 1970 - 71 - 72.

Si vous préférez ce questionnaire en
français, veuillez cocher ☐

Saskatchewan and British Columbia residents please note: To avoid duplication of enquiry this survey is conducted under a cooperative agreement made in accordance with Section 11 of the Statistics Act, for the joint collection and sharing of information pertaining to Saskatchewan residents with the Saskatchewan Department of Agriculture and British Columbia residents with the British Columbia Ministry of Agriculture and Food. If you object to sharing this information please inform us in writing and mail your letter along with the completed questionnaire to the Agriculture Statistics Division of Statistics Canada.

800

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Please correct any mistakes in Name or Address

(W.C.)

ESTIMATED AVERAGE YIELD PER SEEDED AREA IN YOUR NEIGHBOURHOOD, 1982

- NOTE: 1. When a crop is NOT GROWN in your neighbourhood, please indicate this with an X.
2. When a crop is an ENTIRE FAILURE in your neighbourhood, please indicate this with an O.
3. PLEASE CHECK (✓) the unit you wish to use in your estimates: Bushels per acre ☐ OR Kilograms per hectare ☐

Crop		Estimated average yield in your neighbourhood
1. SPRING WHEAT (excluding durum and utility wheat)	212	
2. DURUM WHEAT	213	
3. UTILITY WHEAT	214	
4. WINTER WHEAT	215	
5. OATS FOR GRAIN	216	
6. BARLEY FOR GRAIN	217	
7. FALL RYE	218	
8. SPRING RYE	219	
9. MIXED GRAINS (Two or more grains sown together)	220	
10. FLAXSEED	221	
11. RAPESEED AND CANOLA	222	
12. PEAS, DRY	223	
13. LENTILS	229	
14. BUCKWHEAT	224	
15. CORN FOR GRAIN	225	
16. POTATOES	226	
17. MUSTARD SEED (pounds or kilograms)	227	
18. TAME HAY (including clover and alfalfa) (tons or metric tonnes)	228	
19. FODDER CORN (green weight) (tons or metric tonnes)	230	

SPECIAL ENQUIRY

Area and yield per area of OATS on your farm			
Area seeded to oats this year on the farm you operate	208		
Area of oats harvested for grain on the farm you operate	232		
Average yield per acre or hectare obtained from the area harvested for grain	233		
Area and yield per area of BARLEY on your farm			
Area seeded to barley this year on the farm you operate	209		
Area of barley harvested for grain on the farm you operate	234		
Average yield per acre or hectare obtained from the area harvested for grain	235		
A. Area of FALL RYE on your farm			
Area of FALL RYE seeded on your FARM for all purposes.	This fall	211	
	Last fall	111	
B. Area of WINTER WHEAT on your farm			
Area of WINTER WHEAT seeded on your FARM	This fall	206	
	Last fall	106	
Progress of harvesting of Spring Wheat in your Neighbourhood, 1982			
		Date	
Cutting or swathing general	261		
Cutting or swathing completed	263		
Threshing or combining general	262		
Threshing or combining completed	264		
Percentage of Harvesting Completed on your farm			
		Per cent completed	
Total of wheat, oats, barley, flaxseed and rapeseed	500	%	

Please complete form and mail in enclosed post-free envelope as soon as possible

